What is claimed is:

1. A resonator comprising:

a spring mechanism having an actual width defining an effective mechanical stiffness;

a mass element having an effective mass;

wherein the actual width is defined by a fabrication process used to form the spring mechanism from a constituent material; and,

wherein the mass element comprises a plurality of beams structures having a geometry defined such that formation of the actual width by the fabrication process results little change to a ratio defined by a change in the effective mechanical stiffness and a change in the effective mass.

2. The resonator of claim 1 wherein the actual width is defined in relation to a design width and a total undercut associated with the fabrication process.

3. The resonator of claim 2, wherein the total undercut is defined by a nominal undercut and a tolerance of undercut; and,

wherein the nominal undercut is accounted for in a design procedure defining the design width.

4. The resonator of claim 3, wherein the net effect of the tolerance of undercut associated with the fabrication process, as applied proportionally to the actual width of the spring mechanism and the effective mass of the mass element, results in little change to

the ratio defined by a change in the effective mechanical stiffness and a change in the effective mass.

5. The resonator of claim 1, wherein the spring mechanism and the mass element are formed from the same constituent material.

6. The resonator of claim 1, wherein the fabrication process includes at least one etch step selected from a group of etch steps including wet etch, plasma etch, and vapor etch.

7. A resonator comprising:

a spring mechanism of predetermined length having an actual width defining an effective mechanical stiffness, a defined geometry, and an effective mass;

wherein the actual width and the effective mass of the spring mechanism are simultaneously defined by application of a fabrication process to a constituent material; and,

wherein the geometry is defined such that application of the fabrication process to the constituent material results in little change to a ratio defined by a change in the effective mechanical stiffness and a change in the effective mass.

8. The resonator of claim 7, wherein the geometry comprises one or more voids formed in the length of the spring mechanism.

9. The resonator of claim 7, wherein the geometry comprises an outer edge having a plurality of indentations, the plurality of indentations having the effect of increasing a surface area of the outer edge exposed to the fabrication process.

10. The resonator of claim 7, further comprising one or more additional mass structures formed integral to the spring mechanism.

11. The resonator of claim 10, wherein the one or more additional mass structures comprises one or more voids formed respectively in a body of the one or more additional mass structures.

12. The resonator of claim 10, wherein the one or more additional mass structures comprises an outer edge having a plurality of indentations, the plurality of indentations having the effect of increasing a surface area of the outer edge exposed to the fabrication process.

13. The resonator of claim 12, wherein the one or more additional mass structures further comprises one or more voids formed respectively in a body of the one or more additional mass structures.

14. A method of forming a resonator, comprising:

defining geometry for a spring mechanism, including an actual width that defines a mechanical stiffness, in relation to a fabrication process used to form the spring mechanism from a constituent material; and,

defining geometry for a mass element formed from a plurality of beam structures and characterized by an effective mass in relation to the fabrication process, such that,

upon application of the fabrication process to the constituent material little change results in a ratio defined by a change in the effective mechanical stiffness and a change in the effective mass.

15. The method of claim 14 wherein the actual width is defined in relation to a design width and a total undercut associated with the fabrication process.

16. The method of claim 15, wherein the total undercut is defined by a nominal undercut and a tolerance of undercut; and,

wherein the nominal undercut is accounted for in a design procedure defining the design width.

17. The method of claim 16, wherein the net effect of the tolerance of undercut associated with the fabrication process, as applied proportionally to the actual width of the spring mechanism and the effective mass of the mass element, results in little change to the ratio defined by a change in the effective mechanical stiffness and a change in the effective mass.

18. The method of claim 14, wherein the spring mechanism and the mass element are formed from the same constituent material.

19. The method of claim 14, wherein the fabrication process includes at least one etch step selected from a group of etch steps including wet etch, plasma etch, and vapor etch.

20. A method of forming a micro-electro-mechanical beam structure, comprising:

defining geometry for the spring mechanism having a predetermined length, an actual width defining an effective mechanical stiffness, and an effective mass;

applying a fabrication process to simultaneously form the actual width and the effective mass of the spring mechanism form a constituent material; and,

wherein the geometry is defined such that application of the fabrication process to the constituent material results in little change to a ratio defined by a change in the mechanical stiffness and a change in the effective mass.

21. The method of claim 20, wherein the geometry comprises one or more voids formed in the length of the spring mechanism.

22. The method of claim 20, wherein the geometry comprises an outer edge having a plurality of indentations, the plurality of indentations having the effect of increasing a surface area of the outer edge exposed to the fabrication process.

23. The method of claim 20, further comprising one or more additional mass structures formed integral to the spring mechanism.

24. The method of claim 23, wherein the one or more additional mass structures comprises one or more voids formed respectively in a body of the one or more additional mass structures.

25. The method of claim 23, wherein the one or more additional mass structures comprises an outer edge having a plurality of indentations, the plurality of indentations having the effect of increasing a surface area of the outer edge exposed to the fabrication process.

26. The method of claim 25, wherein the one or more additional mass structures further comprises one or more voids formed respectively in a body of the one or more additional mass structures.